

# PATENT SPECIFICATION

(11) 1219089

1219089

## DRAWINGS ATTACHED

- (21) Application No. 23750/67 (22) Filed 22 May 1967  
 (23) Complete Specification filed 22 May 1968  
 (45) Complete Specification published 13 Jan. 1971  
 (51) International Classification F 04 f 1/06  
 (52) Index at acceptance  
 FIR 3A3D  
 AST 420  
 (72) Inventor DAVID FREDERICK CLEAVER



## (54) AEROSOL DISPENSING ADAPTOR

(71) We, MOORE MEDICINAL PRODUCTS LIMITED, a British Company, of Waverley House, Aberdeen, Scotland, do hereby declare the invention, for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to aerosol dispensing adaptors of the kind having a delivery passage leading, optionally via an expansion chamber, through an orifice to the atmosphere, and being constructed and arranged to co-operate with the release valve of an aerosol dispensing container so that the contents of the dispensing container, on being released, pass through the delivery passage, expansion chamber (when present) and orifice. The orifice is generally of smaller diameter than the delivery passage so as to break up the stream of contents released from the container via the delivery passage, and if applicable expansion chamber, into a spray with the required characteristics.

There is danger of this orifice becoming blocked either by a buildup of solid particles from a suspension, or by crystals formed on the repeated dry-out of a film of residue from a solution.

It is known that medicaments which are intended for use by inhalation can be presented in the form of an aerosol spray. For this purpose the dispensing adaptor is generally provided with a mouthpiece in which the medicament spray is discharged through the orifice into a comparatively large recess, which recess is provided with an outlet for inhalation of the medicament by the user and possibly also with an air inlet. In such cases, the orifice may be quite inaccessible, and blockages of the orifice may be a serious matter for patients, for example, asthmatics, who may be elderly or feeble.

An object of the present invention is to provide an aerosol dispensing adaptor in which the orifice is readily accessible for cleaning.

The invention provides an aerosol dispensing adaptor, having a delivery passage leading, optionally via an expansion chamber, through an orifice to an open recess constituting a mouthpiece to said orifice and being constructed and arranged to co-operate with the release valve of an aerosol dispensing container so that the contents of the dispensing container, on being released, pass through the delivery passage, expansion chamber (when present) and orifice, wherein the orifice is formed as part of a separate member which can readily be removed from (and replaced on) the remainder of the adaptor by hand so as to provide easy access for cleaning the orifice.

Thus the dispensing adaptor is provided with a mouthpiece in which the contents of the aerosol container are discharged through the orifice into a comparatively large recess which is provided with an outlet (whether to the atmosphere or for inhalation of the aerosol contents by the user). The mouthpiece may be formed as the separate member with the orifice being conveniently positioned at one end. The mouthpiece may be releasably secured to the remainder of the dispensing adaptor by any desired means, for example, by means of co-operating screw threads, or by a snap-on-fitting, or by a bayonet-type cam fitting.

It will be appreciated that the means for securing the mouthpiece to the remainder of the adaptor must form an adequate seal under the conditions of use, so that the contents of the aerosol container can only escape through the orifice. When the mouthpiece forms one wall of the expansion chamber, this may be achieved, for example, by providing co-operating sealing faces on the mouthpiece and the remainder of the adaptor surrounding the expansion chamber; or by providing a resilient sealing rib on the mouthpiece or the remainder of the adaptor or both; or by positioning a resilient sealing O-ring between the adjacent surfaces of the mouthpiece and the remainder of the adaptor;

[P. 2]

or by any other convenient method. It is preferred to provide co-operating screw threads on the mouthpiece and the remainder of the adaptor so that, by screwing the mouthpiece tight home, a consistently good seal can be achieved.

The invention is now more particularly described with reference to the accompanying drawings, in which like numerals represent like parts, and in which:

Figure 1 is a sectional side elevation of an aerosol dispensing adaptor and Figure 2 is a sectional end elevation along the line 2-2 of Figure 1, and

Figures 3, 4, 5 and 6 are sectional side elevations of adaptors showing different ways of sealing the expansion chamber.

Referring to Figures 1 and 2, an aerosol dispensing adaptor 10 has a delivery passage 11 leading to an expansion chamber 12 and thence through a narrow orifice 13 into a recess 14 in a mouthpiece 15, which recess 14 has an outlet 16 to the atmosphere. A skirt 17 and a mouth 18 at the entrance to the delivery passage 11 are arranged to co-operate with the release valve (not shown) of an aerosol dispensing container so that the contents of the container, on being released, pass through the delivery passage 11, expansion chamber 12 and narrow orifice 13 into the recess 14. The mouthpiece 15 is formed as a separate member with the narrow orifice 13 positioned at one end. The mouthpiece 15 is releasably secured to the remainder of the dispensing adaptor 10 by means of co-operating screw-threads 19 and 20, and ribs 21 are provided on the exterior surface of the mouthpiece 15 so that it can be screwed tight home into the remainder of the adaptor 10. In this way a consistently good seal can be achieved under the conditions of use, so that the contents of the aerosol container can only escape from the expansion chamber 12 through the orifice 13. Alternative sealing arrangements are illustrated in more detail in Figures 3 to 5.

In Figure 3, the part of the mouthpiece 15 surrounding the narrow orifice 13 is in the shape of a frustum of a cone, the flat surface 22 (in which the orifice 13 is positioned) forming one wall of the expansion chamber 12, and the conical surface 23 being in sealing engagement with a corresponding surface 24 on the remainder of the adaptor 10.

In Figure 4, the part of the mouthpiece 15 surrounding the narrow orifice 13 is similar to that of Figure 3. But no corresponding surface 24 is provided on the remainder of the adaptor 10, and a seal is provided at a sealing point 25 by virtue of the resilience of one or other of the mouthpiece 15 and the remainder of the adaptor 10. In addition, the forward facing surface 26 of the remainder of the adaptor 10 has a protuberance 27 which provides a further seal with

the adjacent face 28 of the mouthpiece 15.

In Figure 5, the part 29 of the mouthpiece 15 in which the narrow orifice 13 is positioned is substantially cylindrical, but is chamfered at its junction with the remainder of the mouthpiece. The hole in the remainder of the adaptor 1 forming the expansion chamber 12 is cylindrical, and has a chamfered portion so that a seal is provided at a sealing point 30.

In Figure 6, a major part of the volume of the expansion chamber 12, is within a conical hole 31, in the mouthpiece 15, which hole tapers towards the narrow orifice 13, leading to the recess 14. The part 29, of the mouthpiece carrying the conical hole 31, is chamfered at 32 at its junction with the rest of the mouthpiece 15, so as to form a seal with a correspondingly chamfered face 33, on the adaptor 10.

Two diametrically opposed segments are removed from the mouthpieces 15, at 34 and 35, to act as air inlets, the segments at 35 being positioned so that air can be drawn up by the user around the neck of the pressurised container which is a loose fit in the skirt, 17. The hole provided by removal of the segment, 34, is blocked off by the remainder of the adaptor body. The screw thread, 19, is a double-start thread, so that an air inlet is always open at position 35 when the mouthpiece, 15, is screwed home.

An air inlet as shown in Figure 6 can readily be provided in the dispensing adaptors illustrated in Figures 1 to 5, and indeed is preferred as its presence simplifies operation for the user.

A cap, 36, is shown in position in Figure 6, and serves to keep the interior, 14, of the mouthpiece, 15, clean when the adaptor is not in use.

An advantage of the dispensing adaptors of this invention is that the orifice can readily be cleaned by anyone, simply by removing the mouthpiece and washing it under a tap.

The two parts of the adaptor are conveniently, though not necessarily, made of the same material, which may be any material suitable for the purpose.

This invention may conveniently be used in conjunction with that described in our co-pending application No. 23751/67 (Serial No. 1219090), filed on the same day as this one, which provides a pressurised aerosol dispenser for administering a medicament by inhalation, which comprises an aerosol dispensing container provided with an aerosol release valve, and a delivery tube provided with means for operating the release valve, the delivery tube having an outlet, for inhalation of the medicament by the user, and an air inlet, wherein the dispenser is so constructed and arranged that the air inlet is normally open, but is shut while the medica-

ment is being released from the dispensing container.

WHAT WE CLAIM IS:—

1. An aerosol dispensing adaptor, having a delivery passage leading, optionally via an expansion chamber, through an orifice to an open recess constituting a mouthpiece to said orifice and being constructed and arranged to co-operate with the release valve of an aerosol dispensing container so that the contents of the dispensing container, on being released, pass through the delivery passage, expansion chamber (when present) and orifice, wherein the orifice is formed as part of a separate member which can readily be removed from (and replaced) on the remainder of the adaptor by hand so as to provide easy access for cleaning the orifice.
2. An aerosol dispensing adaptor as claimed in claim 1, wherein the mouthpiece is formed as the separate member.
3. An aerosol dispensing adaptor as claimed in claim 2, wherein the orifice is positioned at one end of the mouthpiece.
4. An aerosol dispensing adaptor as claimed in claim 2 or claim 3, wherein the mouthpiece is releasably secured to the remainder

of the dispensing adaptor by means of co-operating screw threads on the two parts.

5. An aerosol dispensing adaptor as claimed in any one of claims 2 to 4, wherein an expansion chamber is present, and the mouthpiece forms one wall of it.

6. An aerosol dispensing adaptor as claimed in claim 5, wherein a seal is formed between the mouthpiece and the remainder of the adaptor by providing co-operating sealing faces on the mouthpiece and the remainder of the adaptor surrounding the expansion chamber.

7. An aerosol dispensing adaptor as claimed in claim 1, and substantially as hereinbefore described with reference to, and as illustrated in, Figures 1 and 2, or any one of Figures 3, 4 and 5 of the accompanying drawings.

8. An aerosol dispensing adaptor as claimed in claim 1, and substantially as hereinbefore described with reference to, and illustrated in, Figure 6 of the accompanying drawings.

STEVENS, HEWLETT & PERKINS,  
Chartered Patent Agents,  
5, Quality Court,  
Chancery Lane,  
London, W.C.2.

Printed for Her Majesty's Stationery Office, by the Courier Press, Leamington Spa, 1971.  
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

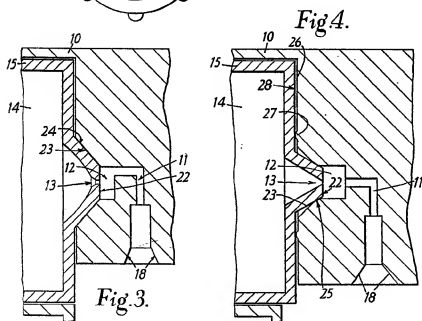
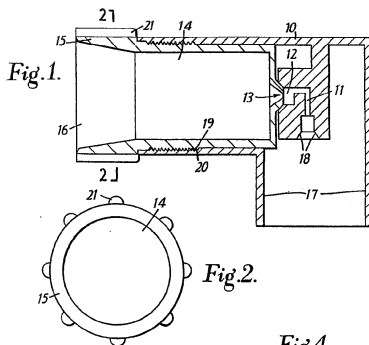


Fig.5.

